

NUMBER EIGHTY-ONE

## 'TRADER' SERVICE SHEETS

AERODYNE 'BLUEBIRD'  
MODEL A FOR A.C. MAINS

**A** DROITWICH filter is fitted in the Aerodyne "Bluebird" receiver, and provision is made for a gramophone pick-up and an extension speaker. The circuit consists of a variable-mu H.F. pentode, a triode detector and a pentode output valve. Volume and reaction controls are fitted.

Model A, with which we deal, is for A.C. mains of 200-250 V, 50 cycles. There is also an A.C./D.C. type (Model B).

## CIRCUIT DESCRIPTION

Two alternative aerial connections (A1 via series condenser C2 and Droitwich wave-trap L1, C3, C17, and A2 via series condenser C1) to coupling coils L2, L3. Single tuned circuit L4, L5, C18 precedes first valve which is a variable-mu pentode (V1, Mullard metallised VP4B) operating as H.F. amplifier. Gain control by variable resistance R3 which varies G.B. applied.

Tuned-anode coupling by L7, L8, C20 to triode detector (V2, Mullard metallised 354V) operating on grid leak system with C7 and R6. Reaction is applied from anode by coil L6 and controlled by variable condenser C22. Provision for connection of gramophone pick-up in grid circuit. H.F. filtering in anode circuit by choke L9 and by-passes C9 and C10.

Resistance-capacity coupling by R8, C11, and R10 to output pentode (V3, Mullard Pen4VE). Fixed tone correction in anode circuit by condenser C12. Provision for connection of low impedance external speaker across secondary of internal speaker transformer T1.

supplied by 1.H.C. full-wave rectifying valve (V4, Micro-mesh or Brimar R2 or R3). Smoothing by speaker field winding L12 and electrolytic condensers C14, C15. Mains aerial connection by C16.

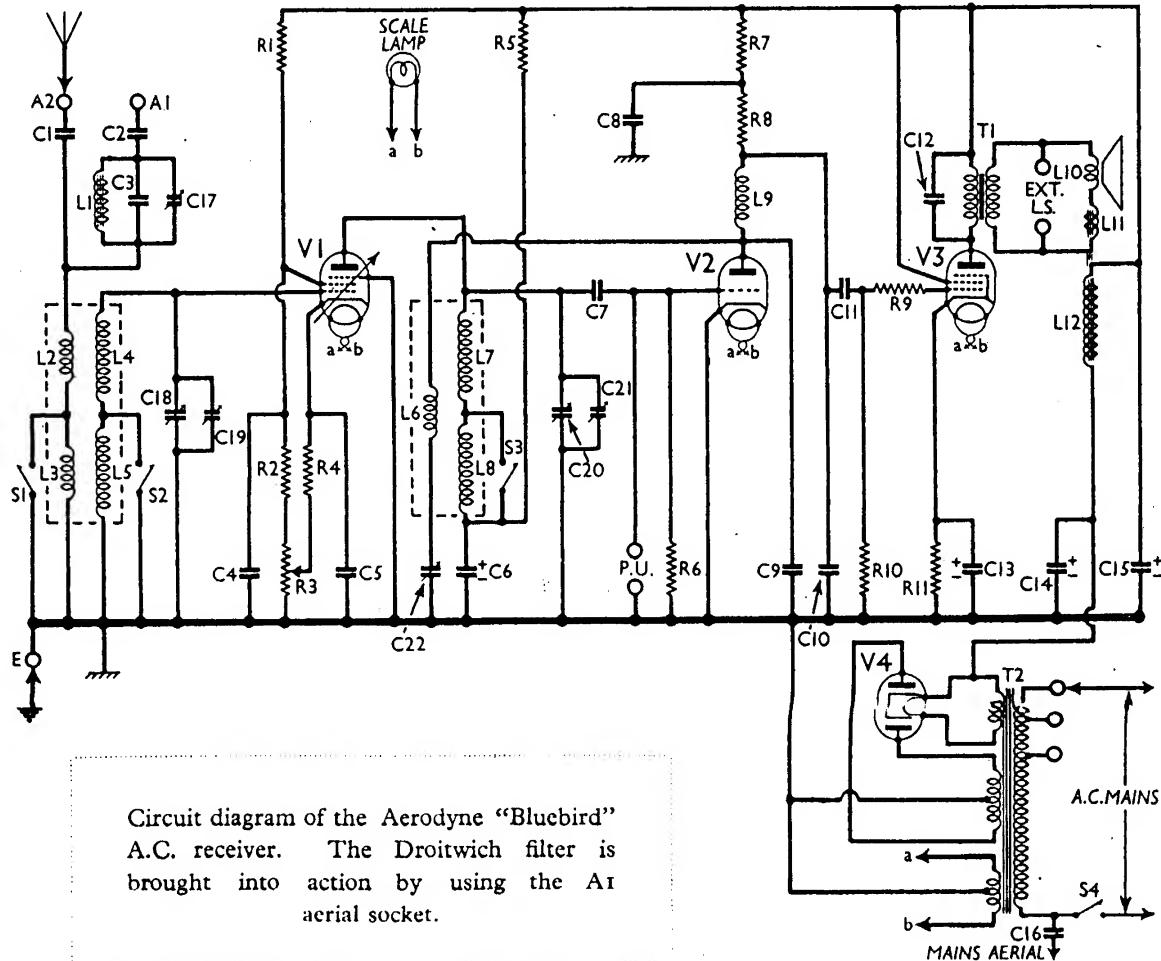
## COMPONENTS AND VALUES

Condensers	Values ( $\mu$ F)
C1	0.0001
C2	0.0005
C3	0.003
C4	0.1
C5	0.1
C6*	1.0
C7	0.00005
C8	1.0
C9	0.0005
C10	0.0005
C11	0.01
C12	0.01
C13*	25.0
C14*	8.0
C15*	8.0
C16	0.0002
C17†	0.002
C18†	0.0005
C19†	—
C20†	0.0005
C21†	—
C22†	0.0003

\* Electrolytic   † Variable   ‡ Pre-set

Resistances	Values (ohms)
R1	15,000
R2	20,000
R3	8,000
R4	100
R5	3,000
R6	1,000,000
R7	20,000
R8	50,000
R9	50,000
R10	500,000
R11	140

Other Components	Values (ohms)
L1	2.2
L2	0.75
L3	14.25
L4	3.5
L5	13.0
L6	6.5
L7	3.5
L8	14.5
L9	200.0
L10	1.75
L11	0.05
L12	1,500.0
T1	750.0
T2	26.0
S1-S3	0.3
S4	0.05
Speaker input trans.	1.500.0
Speaker speech coil	—
Hum neutralising coil	—
Speaker field coil	—
Speaker input trans. (Pri. Sec.)	750.0
Mains trans. (Pri. total)	26.0
Heater sec. (Rect. heat. sec.)	0.05
H.T. sec.	0.05
Waveband switches	440.0
Mains switch, ganged R3	—



Circuit diagram of the Aerodyne "Bluebird" A.C. receiver. The Droitwich filter is brought into action by using the A1 aerial socket.

## **DISMANTLING THE SET**

**Removing Chassis.**—To remove the chassis, remove the back (seven round-head wood screws), four control knobs (pull off), the two round-head wood screws holding the tuning scale to the cabinet front, and the three bolts (with washers) holding the chassis to the cabinet bottom. The chassis can now be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes.

To remove the chassis entirely, unsolder the leads from the speaker terminal panel. When replacing, connect the leads as follows, numbering them from left to right, with the transformer pointing to the bottom right-hand corner of the cabinet: 1 and 2 joined together, red; 3, blue; 4, black.

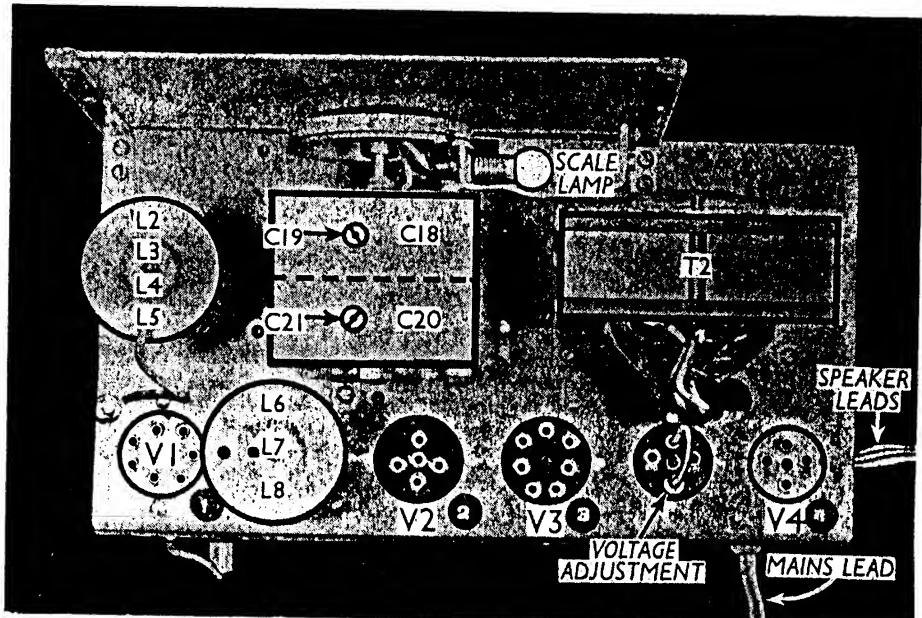
**Removing Speaker.**—If it is necessary to remove the speaker, slacken the four clamps holding it to the sub-baffle and remove the round-head wood screw (with washer).

## VALVE ANALYSIS

Readings of valve voltages and currents given in the table below were taken with the receiver operating on 220V A.C. mains, with the transformer on the 230 V tap. The volume control was at maximum, while reaction was at minimum, and there was no signal input. Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V <sub>1</sub> VP4B	210	7.4	135	2.7
V <sub>2</sub> 354V	85	2.8	—	—
V <sub>3</sub> Pen4VB	210	30.0	230	3.4
V <sub>4</sub> R3	265†	—	—	—

†Each anode, A.C.



Plan view of the chassis. A valve-holder is used to provide sockets for mains voltage adjustment.

## GENERAL NOTES

**Switches.**—**S1-S3** are the waveband switches, in a single unit, and they are all *closed* on the M.W. band and *open* on the L.W. band. Note that **S1** and **S2** each have one common contact.

**S4** is the Q.M.B. mains switch, ganged with the volume control **R3**.

**Coils.** **L1** is the Driortwich wave-trap coil, mounted beneath the chassis. **L2-L8** are in two screened units on the chassis deck, and **L9** is an H.F. choke, beneath the chassis.

**Scale Lamp.**—This is an Osram M.E.S. type, rated at 6.2 V, 0.3 A.

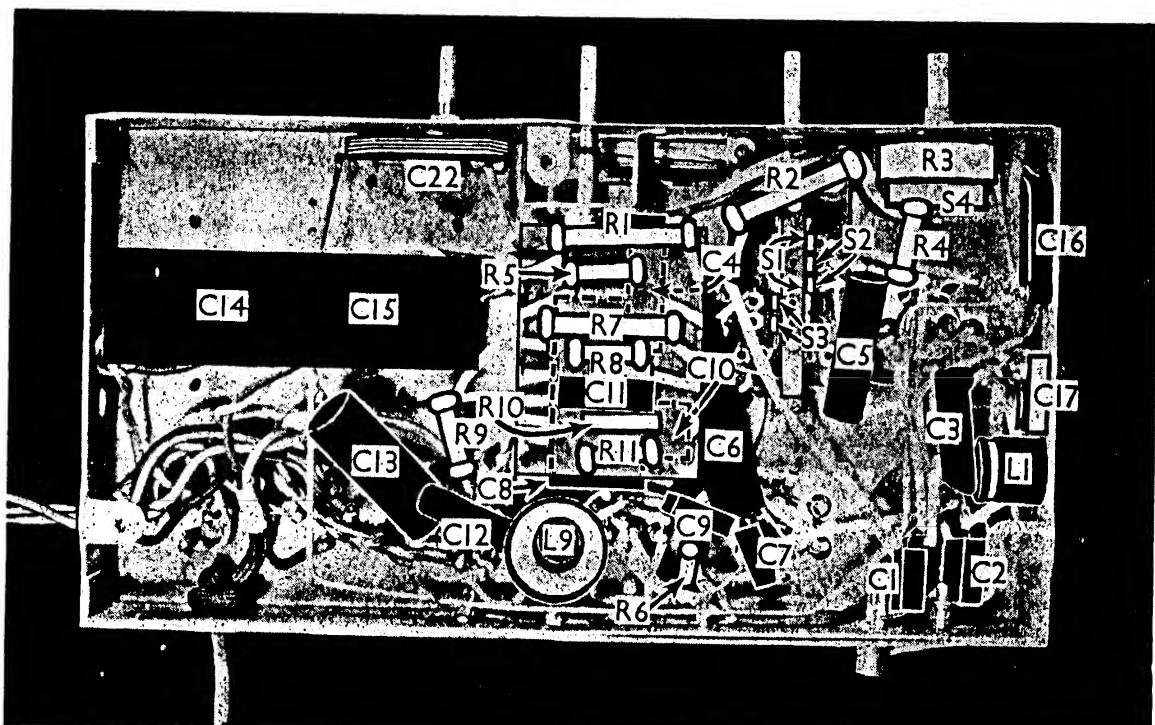
**External Speaker.**—Two sockets for a low resistance external speaker are provided on a paxolin strip at the base of the speaker transformer. The resistance

of the speaker should be about  $2\Omega$ .

**Condensers C4, C8, C10.**—These are all hidden beneath the paxolin component panel in the middle of the underside of the chassis. **C4** is a tubular type, and **C10** a flat mica type, mounted beneath the paxolin panel, while **C8** is a  $1\mu F$  paper type secured to the chassis itself. The positions of these condensers are indicated in our under-chassis view by dotted lines.

**Condensers C14, C15.**—These are two  $8\mu F$  dry electrolytics in one unit beneath the chassis. There is a common negative (black) lead, and two positives (red). The red lead going to a heater socket of the V4 valve-holder is the positive of C14.

the  $\frac{1}{4}$  valve-holder is the positive of C14. Condenser C17. — This tunes the Droitwich filter, and is adjustable through a hole in the side of the chassis.



Under-chassis view. C4, C8 and C10 are beneath the component panel in the centre. C17 is adjusted through a hole in the side of the chassis.